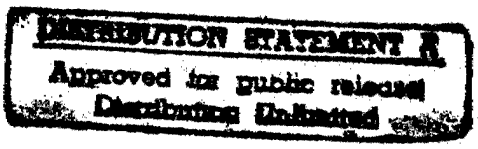
THE USE OF SEABEES TO PERFORM MAINTENANCE AND REPAIR ON NAVAL FACILITIES IN THE CONTINENTAL UNITED STATES

by

Walter M. LeNoir, III



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Abstract

THE USE OF SEABEES TO PERFORM MAINTENANCE AND REPAIR ON NAVAL FACILITIES IN THE CONTINENTAL UNITED STATES

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A masters report on the use of Seabees to supplement the other facility management assets that Navy Public Works Officers and Staff Civil Engineers have at their disposal. Every tool possible must be utilized to effectively manage and maintain the Navy's $171 billion facility assets. The paper will discuss Naval Mobile Construction Battalions, Construction Battalion Units, and individual Seabees assigned to shore installations.

Chapter 1 of this report provides an introduction and background to the Naval Construction Force and Navy Public Works. Chapter 2 discusses some of the areas for utilization of Seabees into maintenance and repair. Chapter 3 discusses the costs and benefits for Seabee utilization. Chapter 4 provides a conclusion and some discussion on the topic of this paper.

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Chapter 1

INTRODUCTION AND BACKGROUND

1.1 Purpose

Facilities management is one of the most challenging tasks the Civil Engineer Corps (CEC) and the Naval Facilities Engineering Command (NAVFAC) have to offer. As of the end of Fiscal Year (FY) 1995, the total Navy Plant Replacement Value (PRV) was $171 billion. This total includes over 393.2 million square feet of buildings, 188.6 million square feet of pavement, and 535 thousand berthing feet of wharves and piers. The average age of Navy facilities is 47 years (1, p. Inventory 1-36). Every tool possible must be utilized to effectively manage and maintain these assets. One tool which could be very advantageous is the use of Seabees to perform maintenance of real property (MRP). This paper will focus on the use of Naval Mobile Construction Battalions (NMCBs), Construction Battalion Units (CBUs), and individual Seabees assigned to naval shore installations to supplement the other facilities management assets that Public Works Officers and Staff Civil Engineers have at their disposal. In discussing this area, the term "Facility Manager" will often be used to group Public Works

Officers, Staff Civil Engineers, and the other personnel who perform this function.

1.2 Introduction to the Naval Construction Force

The Seabees are the Navy's construction forces—enlisted members of the Naval Construction Force (NCF). The NCF consists of commissioned units of the Navy operating forces that are under the control of the Chief of Naval Operations (CNO) as shown in Figures 1 and 2. The CNO commissions NCF units, assigns them to the fleet, and approves their deployment. In addition, he defines the general mission, approves personnel allowance lists, establishes detachment and detail sites, and approves the Naval Mobile Construction Battalion (NMCB) Table Organization Allowance (TOA) except for small arms, weapons, and landing party equipment, which are approved by the Chief of Naval Material (2, p. 1-6).

The Commanders in Chief of the Atlantic Fleet (CINCLANTFLT) and Pacific Fleet (CINCPACFLT) are charged with ensuring that NMCB employments and assigned projects follow CNO policies. They exercise command (operational) and administrative control of the units of the NCF assigned to their command. Command control is the authority to assign tasks, to designate objectives, to give

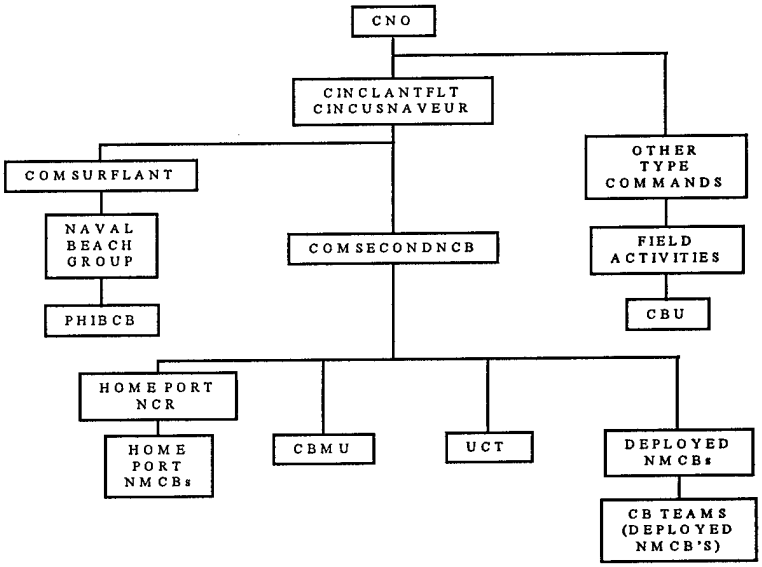

Figure 1: Chain of Command for Atlantic Fleet Seabees (2, p. 1-7)

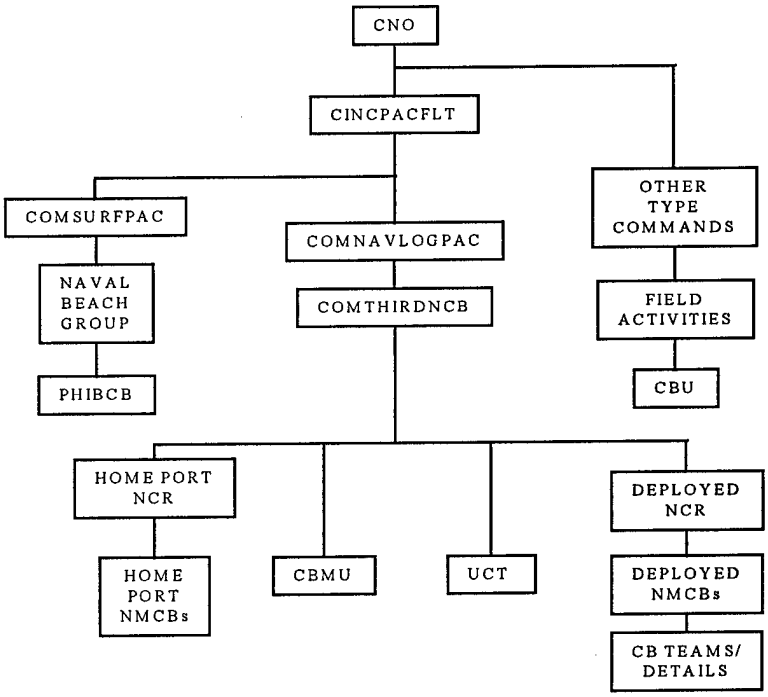

Figure 2: Chain of Command for Pacific Fleet Seabees (2, p. 1-7)

any specific directions necessary to accomplish the mission. Administrative control is the authority and responsibility to outfit and provide logistical and administrative support (2, p. 1-9).

Under the Commanders in Chief of the Fleets, various type commanders control all the ships, submarines, aircraft, and other units of a certain type. Commander, Second Naval Construction Brigade (COMSECONDNCB) at Little Creek, Virginia and Commander, Third Naval Construction Brigade (COMTHIRDNCB) at Pearl Harbor, Hawaii have been established as representatives of CINCLANTFLT and CINCPACFLT, respectively, to exercise command and administrative control over assigned NMCBs. Much of this control is exercised through the homeport Naval Construction Regiment (NCR). The homeport NCR performs the routine functions related to coordination of administration, training, project selection, and logistical support for assigned units (2, p. 1-10).

When an NMCB is deployed overseas, it is under the command and control of a separate NCF commander. Usually, the NCF commander will be COMSECONDNCB when the battalion is deployed to the Caribbean, South America, Central America, Africa, or Europe and COMTHIRDNCB when the battalion is deployed to the Pacific or Asia. Operational command of the NMCB will be exercised, in all cases, through a designated NCF commander (2, p. 1-10).

The CNO may establish NCRs and Naval Construction Brigades (NCBs) to meet certain command requirements in particular geographic areas or situations. Operational regiments consist of two or more NMCBs under one commander; a brigade is made up of two or more regiments under one commander. The mission of the operational brigades and regiments is different from the mission of the homeport regiments. Operational regiments and brigades are primary planning groups and exist as subdivisions of the military command, exercising the administrative and operational control to meet specific operational requirements. The homeport regiments have broad administrative and logistic duties, with a mission to ensure maximum effectiveness of all units, while in homeport, in achieving the highest possible state of readiness to meet their disaster recovery, contingency, and wartime missions of military construction support of the Armed Forces (2, p. 1-11).

1.3 Naval Mobile Construction Battalions (NMCBs)

The primary mission of the Naval Mobile Construction Battalions is to provide responsive engineer construction capability to Navy, Marine Corps, and other forces in military operations; to construct and maintain base facilities; to repair battle damaged facilities; and to conduct defensive operations as required by the circumstances of the deployment situation. In time of emergency or disaster, they have a secondary mission to conduct disaster control and recovery

operations, including emergency public works functions (3, p. 1 of encl 1). Figure 3 shows the basic organization of a 600-person NMCB.

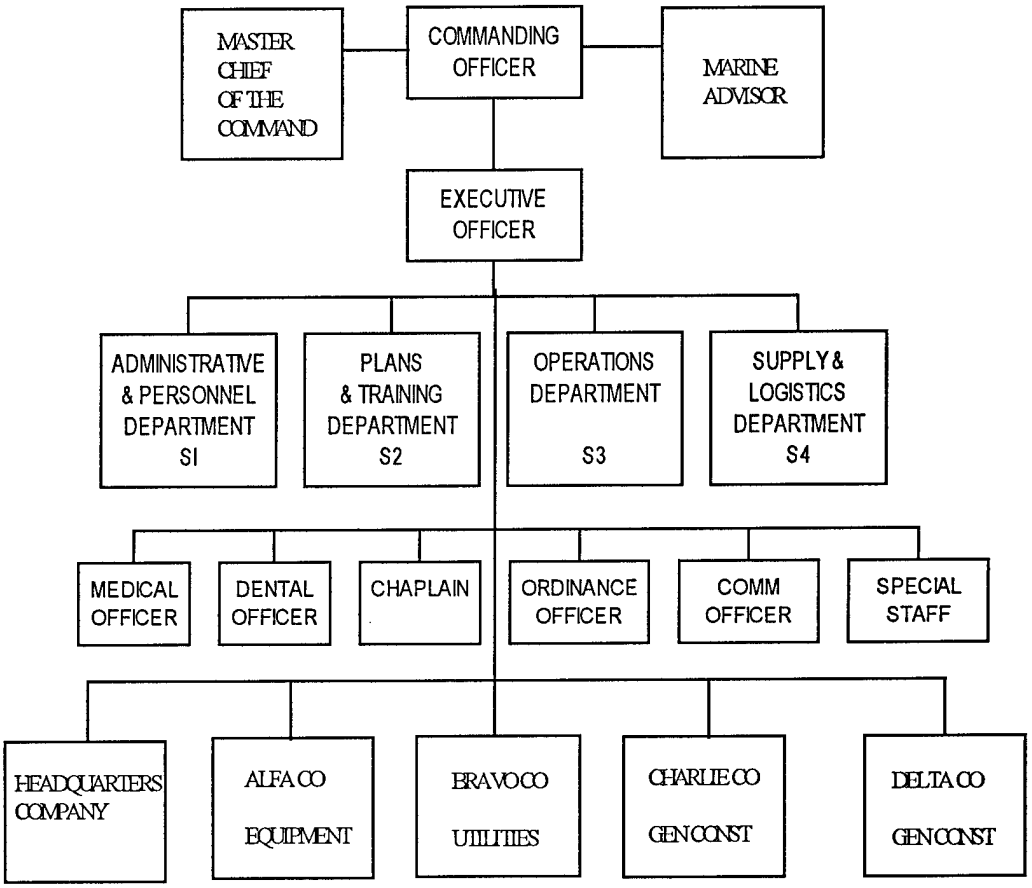

Figure 3: Typical NMCB Organization (2, p. 1-11)

To train for their mission NMCBs deploy during normal peacetime on a regular schedule. Port Hueneme, California and Gulfport, Mississippi each have four battalions homeported there. NMCBs 1, 7, 74, and 133 are in Gulfport, and NMCBs 3, 4, 5, and 40 are in Port Hueneme. Each battalion trains in homeport

for seven months and then deploys for seven months. Upon deployment, usually close to one-half of the battalion stays together in what is called a "mainbody", and the rest deploy in smaller groups to various "detail sites". There are four mainbody deployment sites (Rota, Spain; Roosevelt Roads, Puerto Rico; Guam; and Okinawa), and any one battalion will continuously rotate between two of the sites with a homeport period in between. Figure 4 shows the deployment schedule for the NMCBs for 1995 through 1997. Unless policy changes are made, the deployment pattern shown will continue indefinitely.

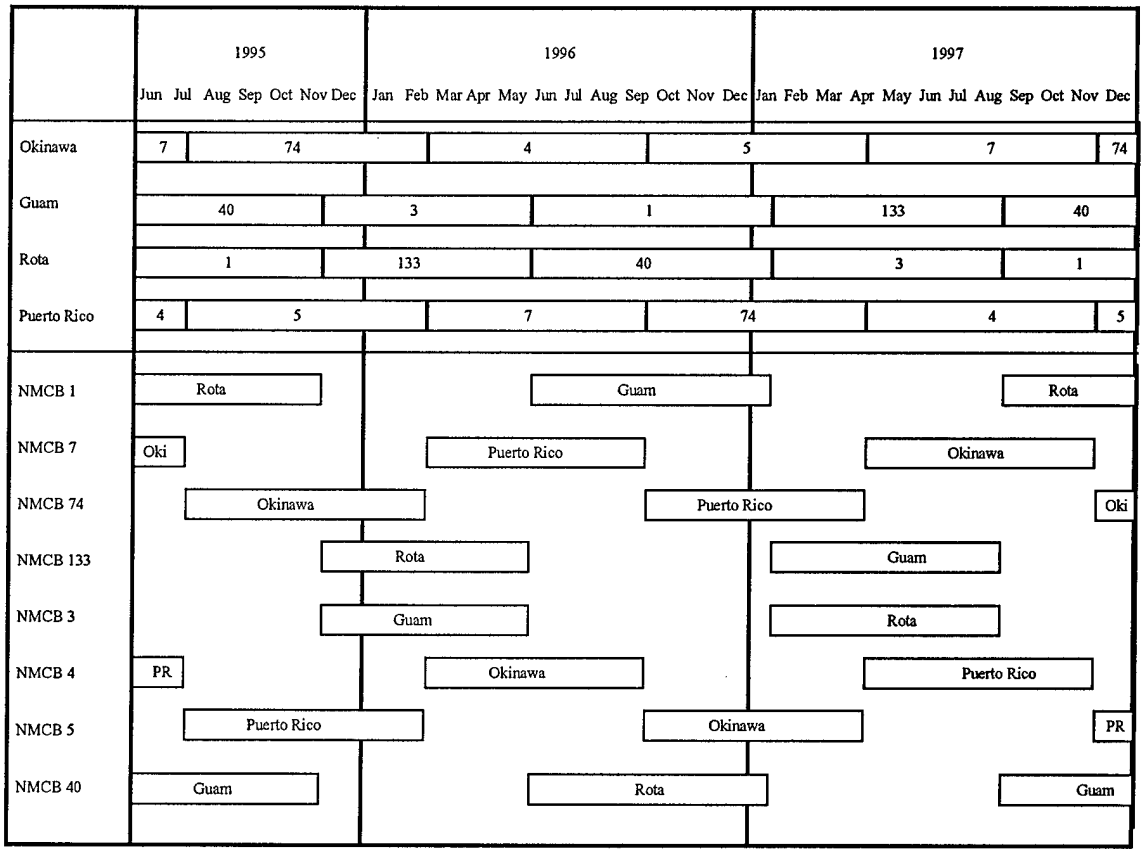

Figure 4: NMCB Deployment Schedule (4, p. 37)

In addition to the mainbody sites, the battalions support detail sites. Some of these sites are consistently supported by each battalion as they rotate through, and some are unique to the current deployment. These details are independent teams, which are organized, on a much smaller basis, similar to the battalions themselves. They may consist of anywhere from a couple of Seabees to, on rare occasions, over 100 Seabees. They are tailored to fit the job. Figure 5 shows a typical detail organization.

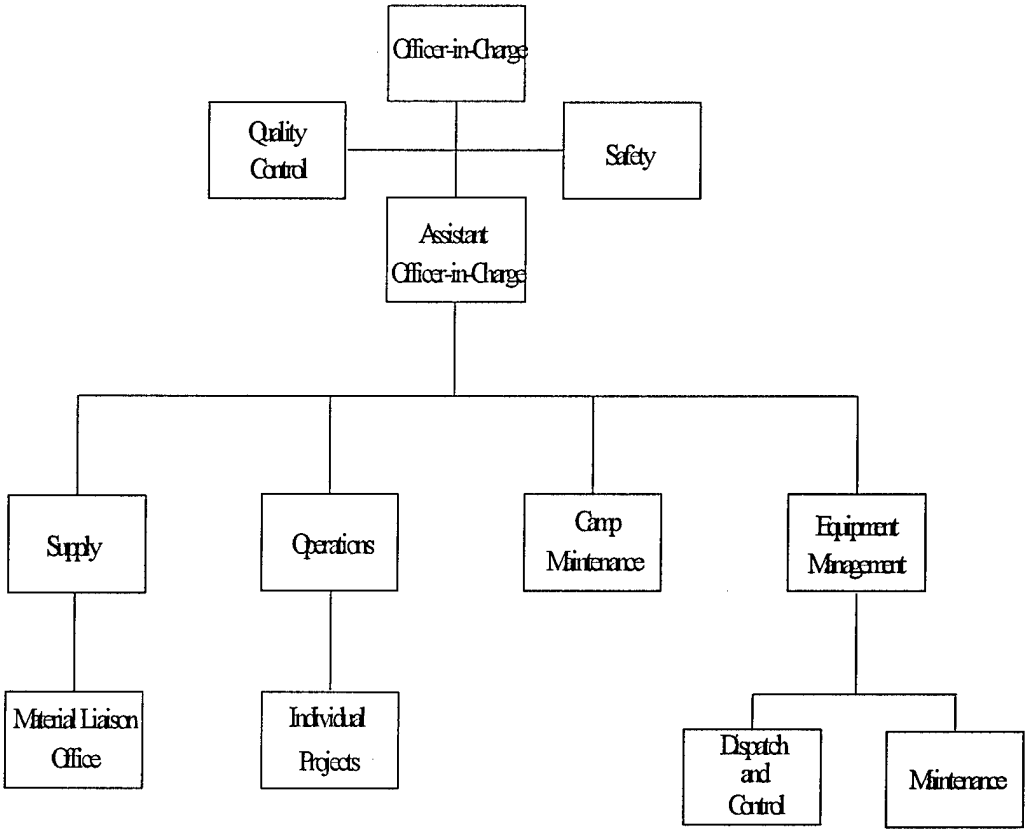

Figure 5: Typical Detail Organization

During their deployments, the battalions perform construction projects, camp maintenance, and various military and professional training. This "tasking" is assigned to them by COMSECONDNCB when they are deploying to Rota or Puerto Rico and by COMTHIRDNCB when they are deploying to Guam or Okinawa. The brigades work with CINCLANTFLT, CINCPACFLT, and other major claimants to determine the tasking.

1.4 Construction Battalion Units (CBUs)

The Construction Battalion Unit (CBU) is a shore-based unit, established by the CNO, outfitted and trained to operate as a military unit in the construction effort. They generally consist of 40 to 60 personnel. Their mission is to be prepared to mobilize either as contingency augment for active NMCBs or as Fleet Hospital public works support units; to conduct individual training essential to maintain their skills; and to perform construction assignments or other functions as may be directed to further that intent (3, p. 1 of encl. 2). While they administratively report to the brigades, they are mainly used by the commanding officer of the shore installation to which they are assigned to spearhead morale, welfare, and recreation projects (2, 1-8). While their organization resembles a medium-sized detail from an NMCB, they only deploy in support of disaster recovery or military contingency operations.

1.5 Seabees in General Billets

In addition to the personnel assigned to the CBUs, Seabees are often assigned to shore installations to fill "general billets". These general billets are established to give the commanding officer some flexibility to fill gaps in his organization, or to allow him to establish special programs at his command. Often, these Seabees are assigned to work in the Security Department. However, many forward-thinking Commanding Officers use them for purposes which make use of their unique construction skills, as will be discussed in this paper.

1.6 Navy Public Works

The mission of Navy public works is to support the operating forces of the Navy by providing services or facility support through effective and efficient use of available resources. A Navy public works organization is similar to that of a public works organization for a city with a similar population. Figure 6 shows the organization for a large Public Works Department. The Public Works Officer (PWO) is a Civil Engineer Corps Officer who is responsible to the Commanding Officer for the planning, programming, design, maintenance, and repair of the base facilities. A Staff Civil Engineer (SCE) is very similar to a Public Works Officer, except that he does not have direct control of shop forces to perform maintenance and repair. The SCE will coordinate with a nearby Public Works

Department or Public Works Center to obtain these and any other resources that he needs (5, p. 1-1).

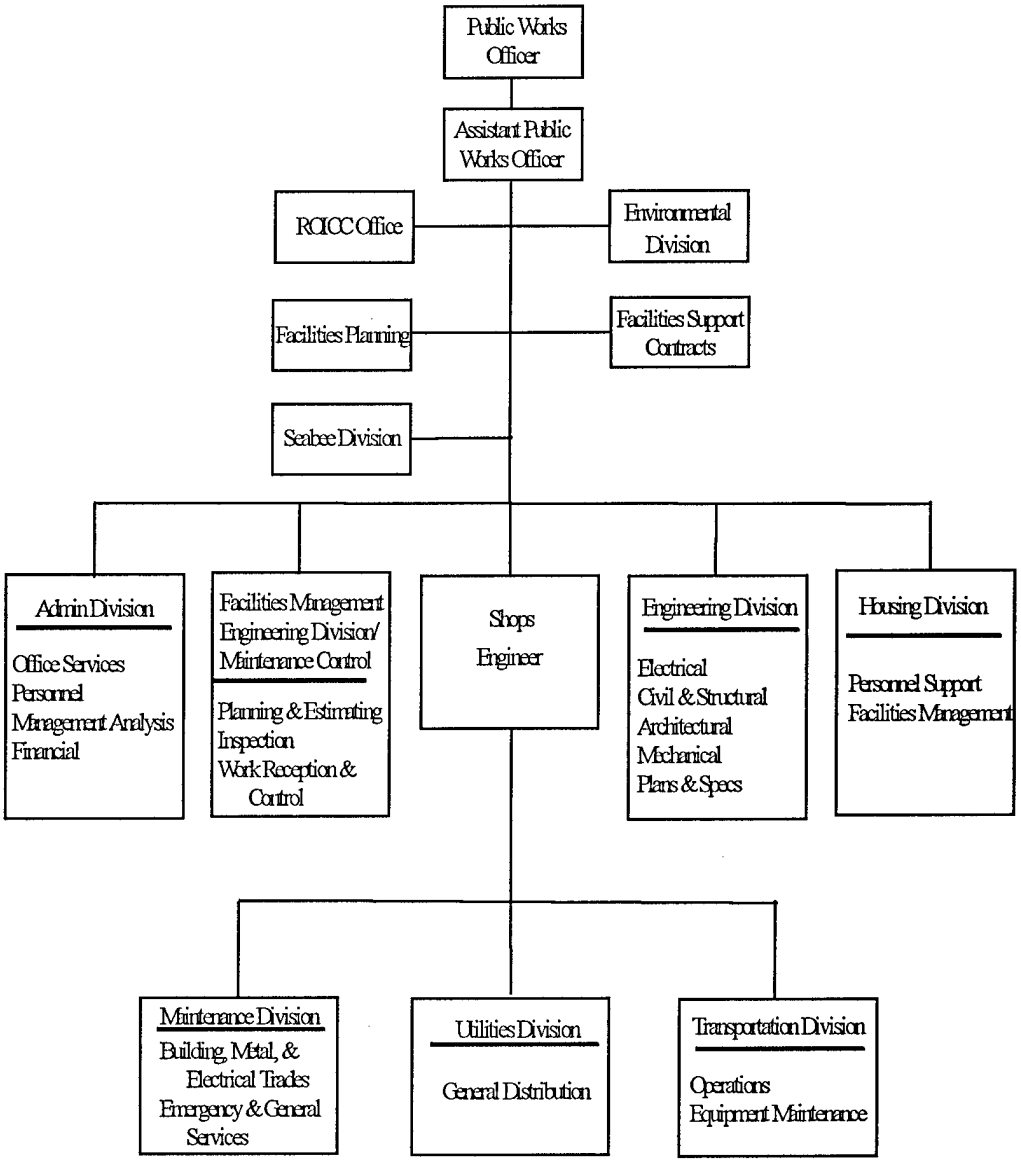

Figure 6: Large Navy Public Works Department (5, p. 2-2)

The Facilities Manager performs many functions, which can be grouped into five areas: identify requirements, plan to satisfy the requirements, program and budget, execute the plan, and report and analyze (5, p. 1-1). A key to performing these functions is knowing the optimum distribution of your total resources to get the work done. Some of your options include in-house shop forces, facilities support contracts, open-end construction contracts, small purchase contracts, one time maintenance and repair contracts, military labor, and self-help. All of these items require budgeting of money, time, personnel, and materials, each with different levels of emphasis. When considering which avenue to use to perform certain items of maintenance and repair, all factors must be taken into account and the most practical approach for the situation should be used. As an example, if a special type of roof needs to be repaired and your shop forces do not have the necessary experience, contracting out the repair probably makes the most sense.

The funding for operations and maintenance at a naval activity comes from a major/sub claimant. The activities under each claimant are in direct competition with each other for the limited resources available. If an activity can build a good relationship with the claimant and can establish that they can make optimum use of resources, their ability to influence claimant resource decisions is greatly enhanced. In other words, if you spend your money wisely, you will probably be

entrusted with more. Obviously, the age, condition, and need for repair of your facilities will have a big impact on this also.

When we talk about generating the work to be accomplished by a maintenance organization, what we are talking about is the identification of all the deficiencies in the existing property through various types of inspections. After generating the work we have to be able to utilize the data to support our request for resources. The tool the Navy uses to provide this information is the Annual Inspection Summary Report (AIS). The AIS is not a true database but an annual printout of the installation's unfunded maintenance and repair requirements and an estimate of cost for correction. The facilities can be sorted by various criteria for ease in obtaining the information needed (5, p. 9-1).

Each facility deficiency is listed as a line item and classified as either "critical" or "deferrable" based on certain requirements. A critical deficiency must involve at least one of the following:

a. catastrophic environmental impact.
b. loss of primary mission.
c. serious safety or health hazard.
d. quality of life issue.

Every thing else is deferrable. Special care must be used when dealing with item "d." If the air conditioning unit in one of the barracks at Naval Air Station

Jacksonville breaks down during the summer, it would probably qualify as a critical deficiency. Replacing the carpeting in the barracks lounge area probably would not qualify as a critical deficiency (5, p. 9-5).

The AIS Report is submitted to the Major Claimant shortly after the first of October each year. It is utilized as a source of information for project development, budgeting and resource planning, status of the inspection program, and mission impact due to facility condition. (5, p. 9-6).

1.7 Facilities Investment

Excellent facilities in which to work and live are necessary to attract and retain the best people and to get them to do their best work. The better private companies know this and invest accordingly. Based on available data, the Navy invests in facilities at a rate approximately one-third that of the better private companies. Throughout the Department of Defense (DoD), total investment in facilities in fiscal year 1987 was $15 billion, $8 billion for construction and $7 billion for maintenance and repair, representing 3% of the $500 billion plant replacement value. The condition of the Navy's facilities and its investment of resources is approximately the same as that represented for DoD. The Navy realizes that it has a problem with the facilities investment level, which is decreasing in real terms. They would like to invest more in facilities, but

ultimately, competing priorities for funding precludes desired increases. (5, p. 10-1).

In fiscal year (FY) 1995 the Navy spent $941 million of its Operations and Maintenance, Navy (O&M, N) budget on maintenance, major repairs, and minor construction. This was approximately 27 percent of their total O&M,N budget. The remainder of the O&M,N budget was spent on base communications, morale and welfare, quarters operation, and other base operations. The numbers for previous years are similar, with the highest percentage over the last 10 years being 29 percent in FY 1987 and the lowest being 25 percent in FY 1993 (1, p. Financial 8 of 17).

Although exact numbers are difficult to come by, if you extrapolate the O&M,N budget for FY 1995, which comprises approximately 35 percent of the Navy's budget for maintenance and repair, the Navy spent approximately $2.7 billion on maintenance and repair. Add to that the approximately $2.9 billion that went into major construction, and the Navy's total investment in facilities was $5.6 billion, or about 3.3 percent of PRV (1, p. Inventory 1 of 36 and Financial 7 of 17).

Chapter 2

AREAS OF UTILIZATION

2.1 Self Help

Since funding is so limited facilities managers must use creative methods to get the work accomplished. They must also make the most of the labor force available to them. There are generally three sources of labor to choose from: DoD military personnel, DoD civilians, and contractors (5, p. 14-1).

Self Help includes DoD military and civilian labor at an activity. Chief of Naval Operations Instruction (OPNAVINST) 11000.8H specifically authorizes the use of self help labor to reduce the critical maintenance backlog identified in the AIS, as well as perform habitability and morale, welfare, and recreation (MWR) projects (5, p. 14-1).

While personnel painting their own workspaces is certainly self help, self help can be done on a much grander scale with the proper planning and attention. The Public Works or Staff Civil Engineering Department is the key to having a successful formal command program. Public Works should coordinate all self help projects, no matter what size. They can ensure economical use of material

and labor and determine if there is a better way to do the project. They need to ensure that projects are consistent with activity development plans and conform to station architectural and color schemes. Most importantly, Public Works should ensure that safety and facility integrity standards will be met in completion of the work (5, p. 14-1).

Self Help is an excellent example of how Seabees can be utilized to perform MRP. Public Works employees can provide technical guidance to personnel wishing to perform self help, but another source of expertise is from local CBUs. Also, if the command has any Seabees assigned to general billets, it would be an excellent idea to place them in Public Works to work with self help. Most Seabees, particularly if they have had a tour in an NMCB, are well-rounded enough to offer advice or know where to get advice on most projects. One or two Seabees can work with a crew of "unskilled" personnel and complete significant amounts of quality repair and construction. They effectively become "force multipliers", getting more out of your available assets.

Each year the Navy awards the "Bronze Hammer" to the top command self help program in each of four categories:

- enlisted allowance less than 1000 with a CBU in the vicinity.
- enlisted allowance less than 1000 without a CBU in the vicinity.

- enlisted allowance more than 1000 with a CBU in the vicinity.
- enlisted allowance more than 1000 without a CBU in the vicinity.

A CBU is considered to be in the vicinity of an activity if it is located within 30 miles. Awards are based on ingenuity, quality of the improvements, and the level of command support provided. OPNAVINST 11000.12B discusses the Bronze Hammer Award, including nomination procedures and forms (6).

An example of a good self help program is that of Naval Air Station (NAS) Oceana in Virginia Beach, Virginia. Although some self help had previously been performed at the station, their program began in earnest on September 21, 1991, with the opening of their prototype self help center. In early fiscal year 1991 (the Federal Government's fiscal year runs from October 1 to September 30, so fiscal year 1991 began October 1, 1990), CINCLANTFLT wanted to establish a self help program that would be a model for other installations. They provided funding for the construction of a 40-foot by 100-foot pre-engineered building warehouse and a modular building customer service office. They also funded Oceana $ 250,000 specifically earmarked to buy materials to stock the self help store.

The Public Works Department was given control of the program. A Seabee Builder Chief in a general duty billet at the station was assigned to be the Self Help Coordinator. He and a civilian production controller from the Public Works

Facilities Management Engineering Division were made co-managers of the self help store. Approximately six months later a new Lieutenant checked into the Public Works Department as the Shops Engineer and was given the collateral duty of Self Help Officer. The station's First Lieutenant's Division was placed under his control also. This effectively set up a Self Help Division inside of the Public Works Department.

NAS Oceana is also home to CBU 415. The CBU is comprised of approximately 45 enlisted Seabees with a Lieutenant or Lieutenant Junior Grade as Officer in Charge (OIC). They perform morale, welfare, and recreation projects and other work as deemed appropriate by the OIC. They work closely with Public Works and the Self Help Program, offering technical advice, tools, and manpower. Although the CBU does not have a lot of direct labor bodies, they can be used on self help projects as a "force multiplier." One or two Seabees can supervise a significant work force in completion of the projects, showing the sailors and other personnel how to perform most of the routine work while performing the more technical or difficult work themselves.

A large portion of the self help projects correct items found on Oceana's AIS. While the majority of the items are deferrable quality of life deficiencies, some are critical deficiencies, and any time that a facility item can be removed from the AIS it is a plus.

In FY 1992, the first year that the self help program was in full operation, Oceana obligated approximately $800,000 of their Maintenance of Real Property budget for materials to complete self help work. The AIS was reduced by approximately $600,000, but perhaps the biggest benefit was the improvement to the appearance of the base and the morale of the personnel who worked there. Productivity increased significantly due to the increase in morale coupled with the improvements in space utilization resulting from the projects (7).

For FYs 1993 - 1995, Oceana obligated nearly $2.56 million for over 7500 self help projects. Their AIS maintenance and repair backlog was reduced by over $2.7 million, and they avoided millions of dollars in potential contractor expenses. Much of the success of this program can be attributed to effective utilization of the CBU, Reserve Seabee Battalions (which will be discussed further), and individual Seabees assigned to general billets. Over these three fiscal years, 79,339 mandays were expended on the projects. Seabee mandays accounted for 25,559, or almost one-third, of the mandays (7).

2.2 Reserve NMCBs

Another way a facilities manager can utilize Seabees to benefit his maintenance plan is by getting on the list of bases to receive support from a battalion detail. The NCF is comprised of both active duty and reserve Seabees. As mentioned

earlier, active duty battalions deploy for seven months at a time and send out details from their mainbody. Reserve battalions operate differently. Since they are comprised of people with civilian jobs, they cannot, except in time of war, deploy as a whole. Instead, they have to make use of their weekend drill time and additional training (AT) days to obtain and maintain their skills. Like their active duty counterparts, the reserve battalions are controlled by COMSECONDNCB and COMTHIRDNCB.

One way that COMSECONDNCB and COMTHIRDNCB ensure that the reserves are getting the proper skills is by utilizing them to complete projects at bases in the United States. Each year the brigades send out a call for work, or request for projects. Through their major/sub claimants, the individual bases submit projects for completion by reserves. The brigades review the projects and set up employment plans for the reserve battalions. While the initial employment plan is done approximately 2 years in advance, constant revisions must be made (8, p. 2).

The base is responsible for providing plans and specifications for the projects, as well as all materials. COMSECONDNCB established a "Duration Force" to control and assist the completion of the work. The Duration Force is made up of a small group of Seabees, usually seven to ten, from the active duty battalion deployed to Puerto Rico. An assortment of construction equipment, pickups,

and tool kits are at their disposal. Their main purpose is to coordinate, assist, and monitor the work performed by the reserve detachments. They provide a certain degree of continuity as the projects proceed.

In calendar year 1995, COMSECONDNCB employed reserve Seabees at various Continental United States (CONUS) sites to assist the Navy in its ongoing MRP program. Despite budgetary constraints, 44 construction projects were undertaken at 20 sites located along the eastern seaboard of the United States. They provided over 77,000 days of total contributory support, resulting in a cost avoidance of over $15 million. Some of the significant projects included barracks renovations at Naval Amphibious Base Little Creek, Virginia and Marine Corps Base Camp Lejeune, North Carolina and renovation of the Ceremonial Guard's new drill and office spaces at Naval District Washington, D. C. (8, p. 19 - 21 of encl. 3).

As mentioned earlier, NAS Oceana has utilized the assistance of Naval Reserve Seabees to complete maintenance and repair and minor construction projects. Over 5800 mandays of support were obtained in FYs 1993 - 1995 to complete 7 much-needed projects, which probably would not have been undertaken otherwise. They included both quality of life and mission-essential work (7).

2.3 Active NMCBs

Obtaining the assistance of active duty NMCBs generally requires even more planning than obtaining the reserves. As OPNAVINST 5450.46J says "Peacetime employment and deployment of NMCBs requires definitive planning. Planning must consider operational readiness training, unit employment, and be responsive to Navy-wide requirements and priorities." (3, p.5).

Project accomplishment is an important consideration in the deployment of an NMCB because of the potential for significant operational benefit. NMCBs should be employed on projects which benefit the shore establishment but must not harm the battalion's readiness to meet wartime and contingency missions. The projects should provide mutual benefit for the battalion and the Navy's shore establishment. "Consistent with readiness, special emphasis will be placed on accomplishment of repair projects which contribute to improved Navy readiness. NMCBs will not normally perform maintenance on shore facilities." (3, p. 6). The maintenance that this instruction refers to is the routine, trouble call type work that makes up much of the day-to-day operations of a public works organization. Non-Appropriated Fund (MWR type work) and other projects of a non-operational nature will be performed only in maintaining a balanced workload and as fill-in work, not as a principle workload element (3, p. 6).

Activities that wish to obtain the assistance of an NMCB must submit their request through their major claimant to their respective Commander-in-Chief (CINC). The procedures concerning documentation, engineering review, funding, and approval of projects are discussed in OPNAVINST 11010.20E. The requests have to provide sufficient detail to permit evaluation of each project for readiness training potential. The requests must be received by the Commander in Chief, U. S. Atlantic Fleet, U. S. Pacific Fleet, or U. S. Naval Forces Europe (as appropriate) by mid-December each year. The Commanders in Chief act as Area Commanders and submit their analyses of the employment plans proposed for NMCB accomplishment in their respective areas. The proposed Seabee construction programs are predicated on the CNO's current policy and directed priorities. The Commanders in Chief's Employment Plans are submitted to the CNO, with a copy to the Commander, Naval Facilities Engineering Command (NAVFACENGCOM or NAVFAC), by February 15 of each year (3).

The Commander, NAVFACENGCOM is the technical advisor to CNO on all matters relating to the Naval Construction Force. He will make recommendations to CNO on the employment plans, as well as policy, manpower, training, and other issues regarding the NCF (3, p. 9).

Based on the employment plans, the CNO will issue the approved NMCB Force Assignment Plan by May 1. This plan indicates the level of Seabee effort allocated to each geographical area and the approved NMCB Deployment Schedule. The Force Assignment Plan and Deployment Schedule will be for the two and one-half year period which begins with the middle of the current fiscal year (3, p. 10).

Until recently (mid-1994), NMCB assets were deployed almost exclusively overseas. From their mainbody sites, details were sent out to sites that were usually in reasonably close proximity. There were several reasons for this.

First, it makes sense to deploy the battalions and their details to train in the areas, or at least similar areas, to which you would expect to utilize them in a contingency situation. Since it is highly unlikely that we would fight a war on United States soil, there is little need to train in that environment, aside from the extensive training that goes on during the homeport period.

Second, effective training can be obtained by deploying the details to third-world areas and places where disasters or other factors closely approximate contingency environments. Building tent camps in Guantanamo Bay, Cuba or repairing war-ravaged schools and facilities in Haiti is far more realistic training than performing work on a naval facility in Texas or Michigan. Deploying to

different areas makes for a better understanding of diversified cultures and can help alleviate "culture shock" when a real-life situation occurs. Also, exposure to different climates and other environmental concerns is a bonus.

Third, deploying as a unit to an unfamiliar area can make it easier to concentrate on training and obtain maximum benefits. When Seabees are detached from their families and normal lives, which they would be in a contingency situation, they can focus on the training and work at hand.

Fourth, when the Seabees are deployed, they are, of course, performing projects. These projects, as this paper discusses, can be a great benefit to the receiving activity. The projects can be used as a bargaining chip by the United States, such as by agreeing to perform a certain project or certain level of effort on a continuous basis in return for our use of host-nation facilities. The bases to which the Seabees deploy and that the Navy operates from are, at least partially, obtained in this way. The completion of the projects also fosters goodwill. Plus, use of Seabee labor is often the only way that certain projects will get done. In some countries contracting out work is extremely expensive and the work may be of inferior quality. Using Seabees to perform the work is both very cost- efficient and one way to better control the quality of the finished product.

In the last couple of years battalions have begun to send details to locations in the United States. For a number of years battalions from the Okinawa deployment site have maintained a detail site in Adak, Alaska, but its remote location far out in the Aleutian Islands would classify it as more of an overseas site than a U. S. one. The recent U. S. sites include San Diego, California; Norfolk / Virginia Beach, Virginia; and Pearl Harbor, Hawaii. In addition, Duration Forces, as mentioned earlier, were established at Key West, Florida and Little Creek, Virginia.

The reasoning behind deploying to the United States is that we need to maintain and better our local facilities with the resources that we have. CINCLANTFLT and CINCPACFLT realized that the Seabees are too valuable an asset to go untapped for local projects. It should come as no surprise that two of the deployment sites, Norfolk and Pearl Harbor, are the homes of CINCLANTFLT and CINCPACFLT, respectively. Since the U. S. detail sites are relatively small, the impact to the NMCB's training program is also small.

Chapter 3

COST - BENEFIT DISCUSSION

3.1 COMSECONDNCB

In discussing the cost benefits of utilizing Seabees to perform maintenance and repair, there are several ways to look at it. Both COMSECONDNCB and COMTHIRDNCB have done studies on cost avoidance and the "value of a Seabee manday." The values that they obtained varied.

COMSECONDNCB used the following calculations to determine cost avoidance per manday (MD) when using Seabees instead of private contractor (9):

ITEM	CONTRACT COST	COST AVOIDANCE
Labor ($35/hr x 8hr/MD)	$280	$280
Material	$280	
Office OH and Profit (5%)	$32	$32
Job OH/Super/General Cond. (15%)	$84	
Subtotal	$676	
SIOH (7% of Subtotal)	$47	$47
Total	$723	$359

Some discussions can be had regarding the values used in this calculation. The $35 per hour is based on Davis-Bacon Labor Wages including fringe benefits, which the government is required to pay on all construction and maintenance and repair work over $2500 in value. No equipment costs are factored in since the costs are assumed to be the same for both contractor work and Seabee work. The 5% value for office overhead and profit is probably a little low. However, overall these values can be assumed to give a reasonable estimate of the costs.

Using the cost avoidance figure of $359 per manday, over the three year period of fiscal years 1993 through 1995 COMSECONDNCB Seabees saved the government approximately $225.9 million. This figure includes 238,085 mandays of work for CINCLANTFLT, avoiding $85.5 million; 152,000 mandays of work on Operation Sea Signal (building refugee camps in Guantanamo Bay, Cuba), avoiding $64.2 million; 29,740 mandays for joint operations, avoiding $10.7 million; 151,500 mandays of work for CINCUSNAVEUR and the European Command, avoiding $54.4 million; 13,500 mandays of work for the Marine Corps, avoiding $4.8 million; and 17,506 mandays for other work, avoiding $6.3 million. This works out to an average savings of over $70 million per year. Most of this work was performed outside of the Continental United States (OUTUS) for the reasons discussed earlier, but in fiscal year 1995 alone $14.4 million of the cost avoidance was attributable to projects performed inside the

Continental United States (CONUS), mostly by the Reserve NMCBs. The projected cost avoidance for fiscal year 1996 in the CINCLANTFLT area is $20.7 million in CONUS, $12.7 million OUTUS, and $11.3 million for military exercises—for a total of $44.7 million (9).

Again based on $359 per manday, the total cost avoidance for fiscal year 1995 for all COMSECONDNCB and COMTHIRDNCB battalions was $129.2 million. This total excludes the twenty shore-based CBUs and the two Underwater Construction Teams (9).

3.2 COMTHIRDNCB

COMTHIRDNCB did several "studies" on the value of a Seabee Manday with quite different numbers being obtained by each. One study they did was very similar to the calculations noted above by COMSECONDNCB. The following are the numbers used in this study (10):

Item	Contract Cost	Cost Avoidance
Labor ($33 per hour)	$264	$264
Material	$264	
Overhead (3% of Labor & Materials)	$ 16	
Profit (8%)	$44	$44
Subtotal	$587	

SIOH (7% of Subtotal)	$ 41	$ 41
Total	$628	$349

The same basic discussions of the numbers can be made here as they were for the COMSECONDNCB ones. The total cost avoidance numbers are very close for both brigades, and the differences in them are due to minor differences in calculations. Plus, as COMTHIRDNCB points out, the cost avoidance value will vary by region and complexity of the project. These values are average figures for the type of work Seabees normally perform across the brigades areas of responsibility (10).

COMTHIRDNCB provides cost avoidance to their customers in several ways, including planned projects, camp maintenance, discretionary projects, exercise related projects, and mineral products production. Eighty-eight percent of the work efforts fall into one of these categories, and the remaining twelve percent is applied to readiness and training activities (10).

COMTHIRDNCB's projected distribution of cost avoidance efforts (by region) are (10):

Region	FY96	FY97
Alaska	4%	N/A

California	18%	21%
Diego Garcia	8%	N/A
Guam	16%	15%
Hawaii	12%	10%
Japan	13%	16%
Korea	4%	5%
Middle CONUS	9%	11%
Northwest CONUS	1%	2%
Okinawa	12%	11%
Southwest Asia	3%	7%
Other WESTPAC	0%	2%

As can be gathered from this chart, in FY 1996, CONUS will be the recipient of 28% of their cost-avoidance effort, and the number is expected to climb to 34% in FY 1997. In addition, if Alaska and Hawaii are included (to calculate total cost-avoidance on United States soil), the numbers rise to 44% for both FY 1996 and FY 1997. This indicates a positive trend toward performing more work in CONUS.

COMTHIRDNCB did another study on the value of a Seabee Manday in mid-FY 1995. They asked NMCB-7, the on-site battalion in Okinawa at the time, to take

each of their projects, both at the mainbody and the detail sites, and obtain cost estimates from the customers on the cost of completing the projects by contract or alternate means. Then, using the estimate of battalion manday effort on those projects and dividing it into the cost estimate, COMTHIRDNCB calculated the value of a Seabee Manday. The values that they obtained ranged from $350 per manday for some utility work in Pohang, Korea to almost $1500 per manday for road work in Adak, Alaska (11).

There are numerous reasons why these figures are so varied. Some of these differences are because of geographic location, mobilization and startup costs, types of work, and the fact that equipment is included in the values. As an example, the road work in Adak is extremely expensive because of the difficulty in shipping personnel, materials, and equipment to an island that is approximately 1200 miles from civilization. Until recently, the Seabees maintained a detail site there that included 62 pieces of Civil Engineer Support Equipment, office spaces, and a crusher / quarry operation to produce mineral products for use in the road work. Plus, the difference in pay for a Seabee working in Adak and one working anywhere in the United States is less than $20 per month. Most contractors would have to pay an exorbitant per diem rate and salary to get workers to go to Adak and exorbitant costs to get his materials and equipment to the island.

These are the main factors, but just some of the ones that make contractor work more expensive.

Of course, it isn't really fair to say that the Navy saved $1500 per day by using Seabees in Adak in lieu of contractors. There are many expenses that the Navy would not normally have to incur, such as depreciation and repair on the equipment, outfitting the detail with cold-weather clothing and supplies, the expense of shipping the personal effects of the detail personnel, etc. Of course, there is also a lost-opportunity cost associated with using the Seabees in Adak since that means that you cannot be using them elsewhere.

3.3 Analysis of Cost - Benefits

Looking at the "cost avoidance" and "value of a Seabee manday" numbers, some people might reason that the Navy should use Seabees exclusively to perform construction and maintenance and repair on our bases. This is obviously not possible with the number of Seabees that we have in the Navy right now. As mentioned earlier in this paper, in FY 1995, the Navy invested approximately $5.6 billion dollars in its facilities; the number of Seabees needed to meet this level of effort would be astronomical. Based on numbers compiled by COMSECONDNCB, it costs approximately $44,000 per year to maintain each Seabee on active duty. Thirty-nine percent of this cost is returned by peacetime

cost avoidance (9). That means that for every Seabee maintained on active duty above that which we need for military purposes, we are costing ourselves almost $27,000. The Seabees are not designed to be an in-house peacetime construction company for the Navy. Their reason for existence is to provide contingency construction support to the armed forces. The peacetime work is just a useful side effect of this primary mission.

Chapter 4

CONCLUSION

The Seabees are a valuable tool for use in performing construction and maintenance and repair on our Navy bases throughout the world. The Navy, as a whole, does a good job of utilizing them for this purpose, while still ensuring that they receive proper training to meet their primary mission. The trend these days seems to be toward more use of the reserve and active NMCBs to perform work in CONUS.

All of this is good news, but there are still several areas where improvements can be made. Many of the Navy's Line Officers, who comprise most of the Navy's senior leadership, including the vast majority of our shore installation commanding officer billets, don't fully understand what the Seabees can do for them. They aren't that familiar with the NCF and consequently, don't know how to effectively utilize its members. Unfortunately, many of the Civil Engineer Corps Officers who advise the commanding officers on facility matters don't understand how to effectively utilize the Seabees either.

To help solve the first problem, better publicity and public relations by the Civil Engineer Corps and Seabees can help educate the Line Officers. The Civil

Engineer Corps is working to solve the second problem by better education of our officers to the things the Seabees can do and by making the standard length for all officer tours in the Seabee Battalions two years to allow more officers to rotate through, thereby building a more well-rounded and knowledgeable pool of officers.

In considering how to effectively utilize Seabees to perform maintenance and repair on our shore facilities in CONUS, there are many factors to weigh. The most important of these is ensuring that Seabees are the most practical method of accomplishing the specific goal. In other words, will their completion of the repair or maintenance save money, provide the necessary quality, and be timely enough.

Another important consideration is ensuring that the individual and unit military training requirements are met. If you are looking at utilizing individual Seabees assigned to the shore installation, the training requirement is not that crucial or hard to attain. If you are looking at utilizing a CBU, the training factor becomes more important, but since one of the purposes of a CBU is to spearhead projects on the base, it should be fairly easy to incorporate their training into the project work. The most crucial training considerations come into play when attempting to utilize the battalions because they are an operational force that must at all times be ready to complete their primary mission.

The benefits of cost avoidance are obtained by utilizing Seabees within the range of their experience and skills and by making the work they perform part of their necessary training. Maximum benefits are obtained by utilizing them wisely as one well-placed piece in the facilities management puzzle. The Navy is becoming increasingly skillful and successful at doing this.

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